

Tweeting about journal articles

Engagement, marketing or just gibberish?

Tweeting about journal articles: Engagement, marketing or just gibberish?



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Intro What do we know about tweeting scientific literature?

- The (non-academic) social media platform mentioning the largest share of scientific papers – **Costas, Zahedi & Wouters, 2015**
- There is a low but positive correlation between citations and tweet mentions – **Haustein et al., 2014**
- Most tweets include the title of the paper or summary of contents – **Thelwall et al., 2013**



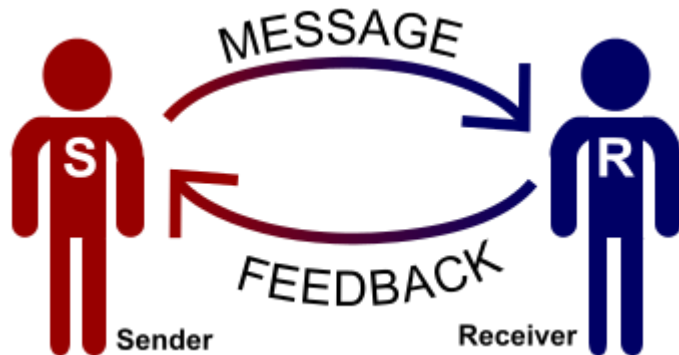
Intro What don't we know about tweeting scientific literature?

- Lack of knowledge on 'who' is tweeting scientific literature – **Ke et al., 2017**
- Lack of explanatory theories on motivations for tweeting scientific literature – **Vainio & Holmberg, 2017**
- The effect of automated accounts on dissemination of scientific literature and on derived metrics – **Haustein et al., 2016**



Context Dental Knowledge Networks project

- Understanding knowledge flows from scientific literature to professional practice in the field of Dentistry
- Diversity of potential audiences: scientists, practitioners, students, patients...



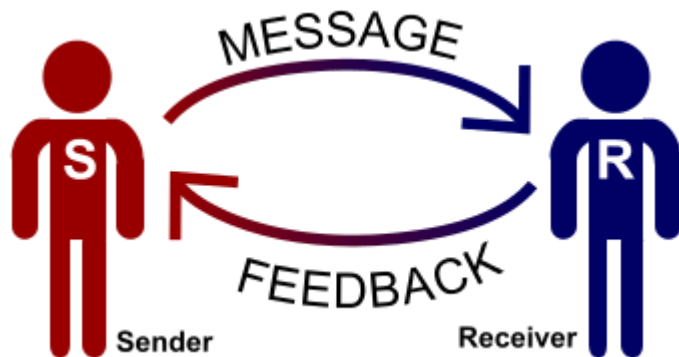
Main goal What role does Twitter play in scholarly communication?

Case study I

- Qualitative study
 1. Top 10 tweeted papers
 2. Analysis of Twitter accounts

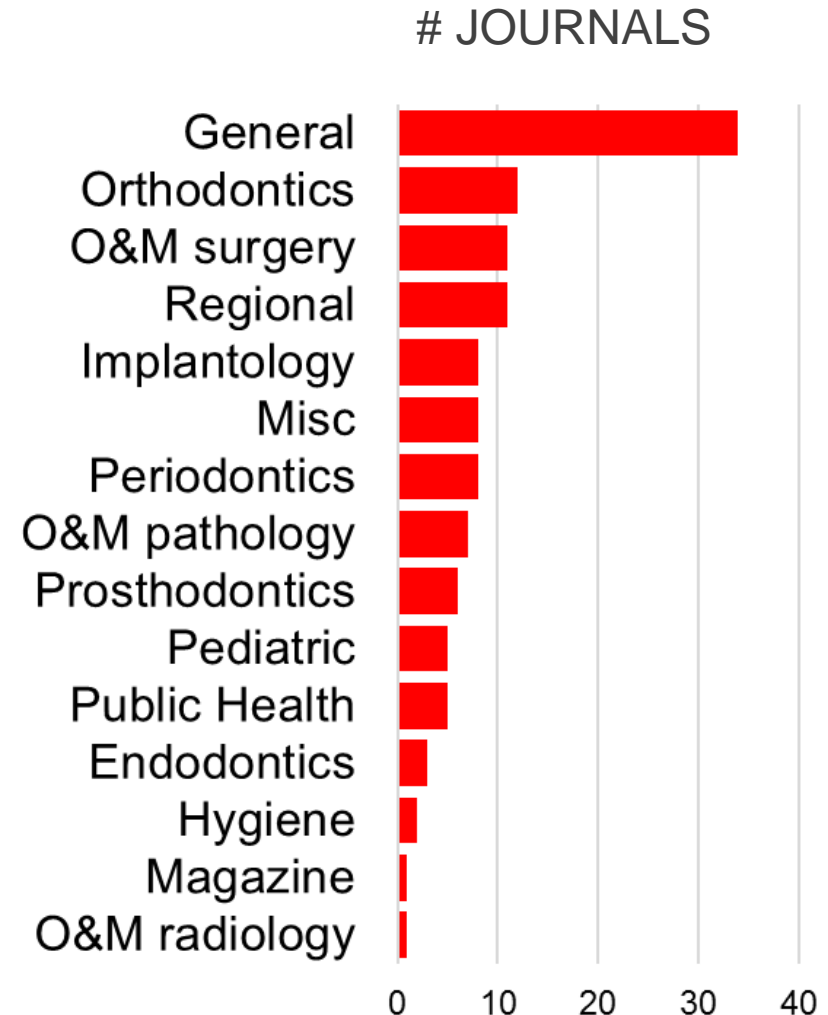
Case study II

- Quantitative study (*in progress*)
 1. Analysis of tweets at the journal level
 2. Comparison between citation and tweet networks
 3. Analysis of Twitter activity of journals



Material & Methods General dataset

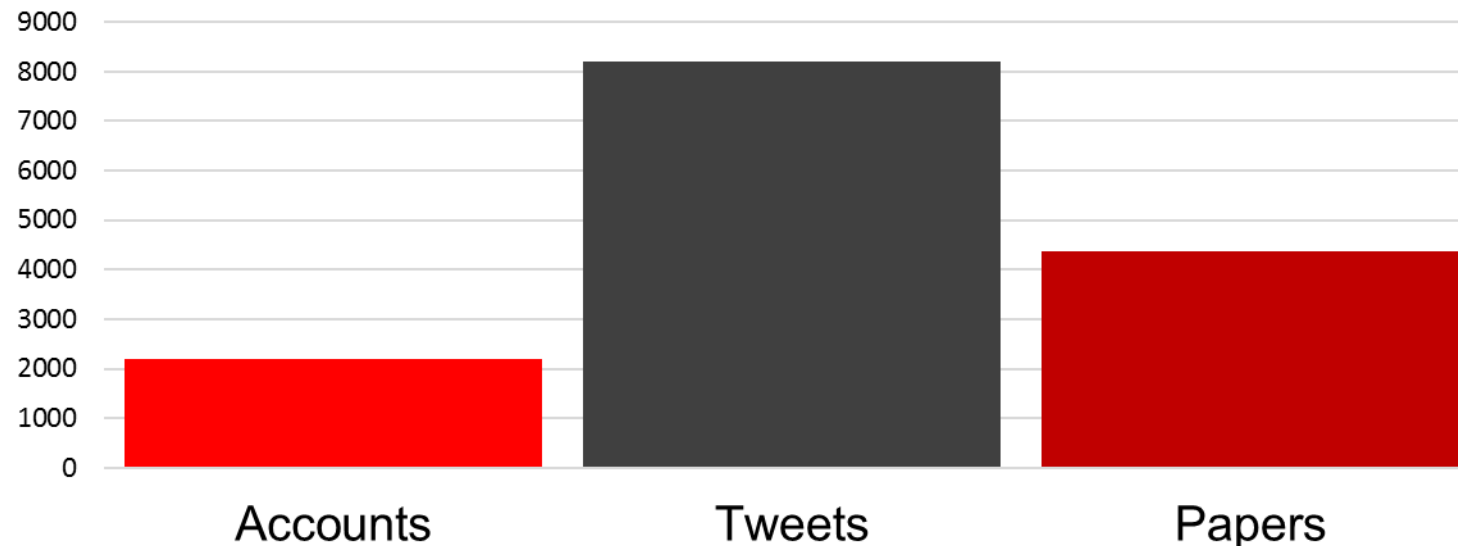
- 124 dental journals from PubMed (**84 from Web of Science**)
- 196,812 research articles
- Journals assigned to specialties
- We use the PMID number to retrieve tweets linking to the paper from **Altmetric.com**
- 15,894 articles were linked from tweets. **8.1%** of the total dataset
- A total of 52,540 tweets were identified



Case I The dental conversation in the US

Case I Material and Methods

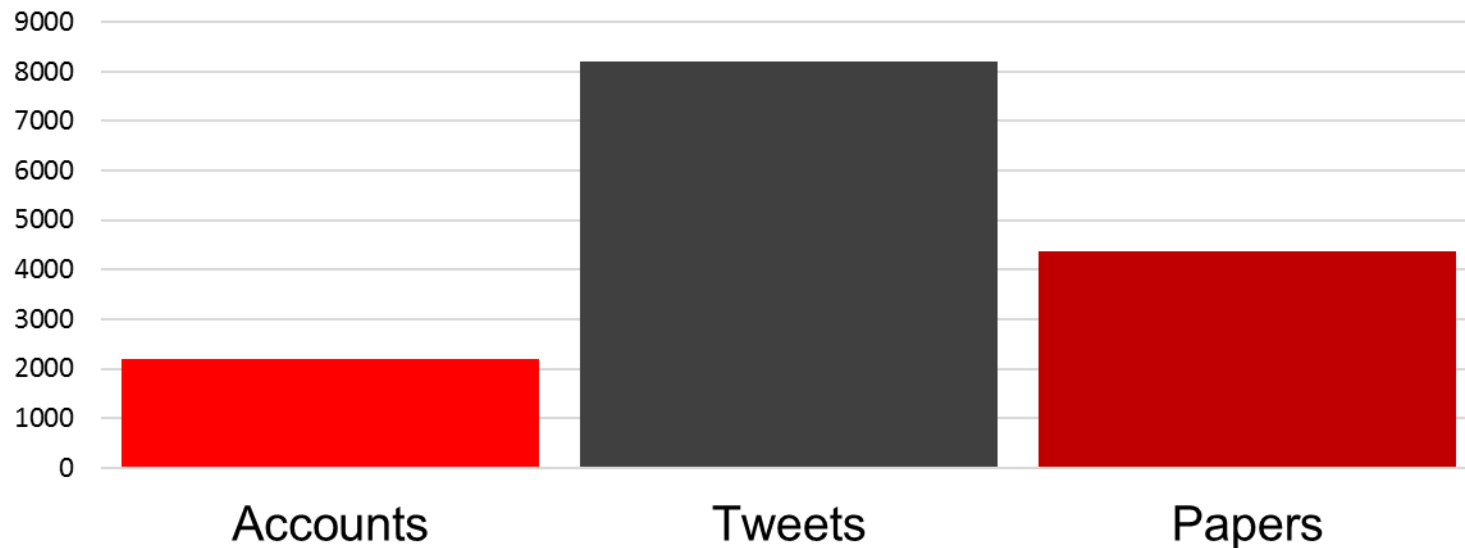
- We selected tweets originating from the United States
- A total of 8,206 tweets linking to 4,358 papers was identified
- These tweets were sent between June 2011 and June 2016
- They belonged to a total of 2,202 Twitter accounts



Case I Material and Methods

Top 10 most tweeted papers

1. Analyzed tweet contents and papers
2. Identified users
3. Characterized tweeting patterns



Case I Results – Top 10 most tweeted papers

SINGLE ISSUE CAMPAIGNERS

Aminoshariae, A. and Khan, A., 2015. Acetaminophen: old drug, new issues. Journal of Endodontics, 41(5), pp.588-593

264 tweets

73% tweets
from
@autismepi

Auto-retweets

Exc Top 2
accounts 15
tweets

Paracetamol research: [\[URL\]](#)

[#Acetaminophen- 'may not be considered a safe drug in #pregnancy'-offspring behavioral disorders, hormone disruption \[URL\]](#)

Case I Results – Top 10 most tweeted papers

SINGLE ISSUE CAMPAIGNERS

Hujoel, P., 2009. Dietary carbohydrates and dental-systemic diseases. Journal of Dental Research, 88(6), pp.490-502

70 tweets

70% tweets from
@AnnChildersMD

17 accounts

Top 2
accounts
retweeting

Title + URL

Does it cause tooth decay or gum disease? Avoid [URL] #LCHF

Is your diet good for your teeth and gums? [URL]

Case I Results – Top 10 most tweeted papers

SOCIAL MEDIA MANAGERS

Lamberts,D.M.,Wunderlich, R.C. and Caffesse,R.G.,1982. The Effect of Waxed and Unwaxed Dental Floss on Gingival Health: Part I. Plaque Removal and Gingival Response. Journal of Periodontology,53(6), pp.393-396

51 tweets

**Identical and
continuous tweeting**

41 accounts

Does wax make a difference in the effectiveness of dental floss? Check it out: [URL]

Case I Results – Top 10 most tweeted papers

BROADER TWEETING

Burt, B.A., 2002. Fluoridation and social equity. Journal of Public Health Dentistry, 62 (4), pp.195-200.

59 tweets

**Tweets refer to
conclusions of paper**

41 accounts

Researcher: Fluoridation is "the most effective and practical" way to reduce dental disparities [URL] #OralHealthEquity

Case I Results – Top 10 most tweeted papers

	Title	Year	Cites	Tweets	Variants	@	Accts
#1	Single-issue campaigner	2015	9	264	71	103	15
#2	Single-issue campaigner	2009	36	70	30	14	17
#3	Broader tweeting	2002	42	59	4	0	41
#4	Broader tweeting	2007	159	54	3	0	33
#5	Social media manager	1982	17	51	2	0	44
#6	Single-issue campaigner	2016	12	39	13	2	34
#7	Social media manager	1999	NA	39	3	0	39
#8	Dup. tweets	2010	47	35	7	0	25
#9	Retweets from BDJ	2013	6	29	13	0	18
#10	Dup. tweets	2009	103	28	2	0	25

Case I Results – Twitter accounts

EXAMPLES OF BOTS

- Automatic text pattern:

True or false? release(100 thick, buffer solution) [URL] #Collagen
@semantic_bot

- Human-like text pattern:

this is a mouth wash that CAN eliminate bad bacteria LIKE stop
cavity's type of good thing? Yes it has bin approve...

@gary_gschafe

Case I Results – Twitter accounts

EXAMPLES OF HUMANS

- The engaged tweeter:

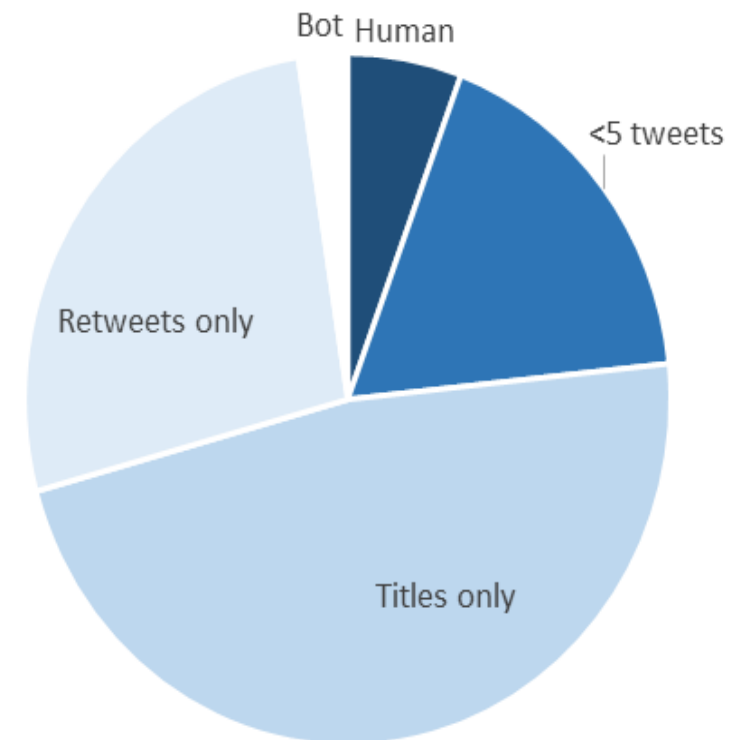
Endosurgery has better initial success, but ReTx offers a more favorable long-term outcome

There is a dose-response relationship btw cigarette smoking the risk of R

@endofactologist

Case I Results – Twitter accounts

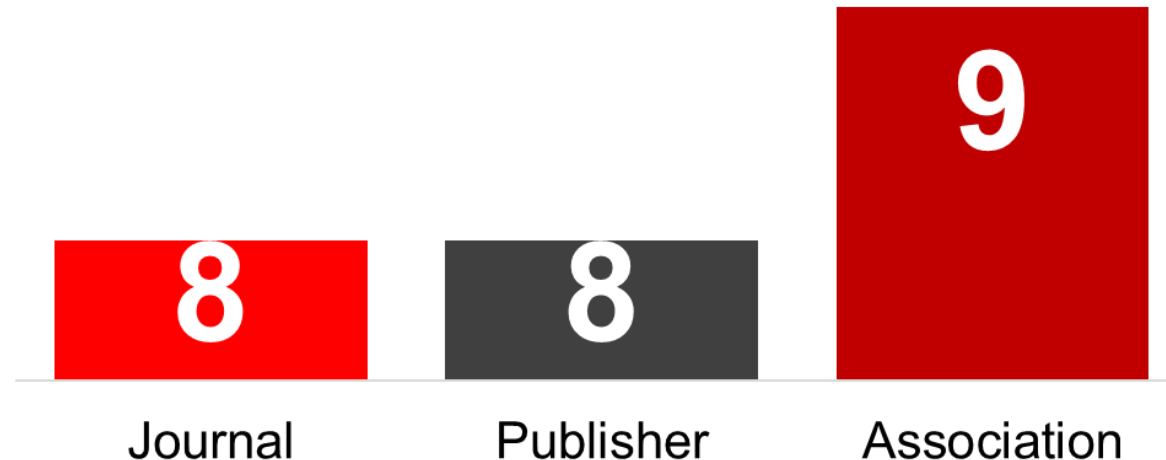
- Most tweets although from humans showed no engagement with the paper
- Only 2.5% tweets came from bots
- 74% of tweeting about dental papers was produced by people behaving like bots



Case II The role of journals promoting their contents

Case II Material and Methods

- The complete dataset was used
- Out of a total of 11,026 accounts 21 were identified related to journals
- Tweet network was overlayed from citation network (Leydesdorff et al., 2017)
- Indicators used: tweets, self-tweets, retweets and impressions

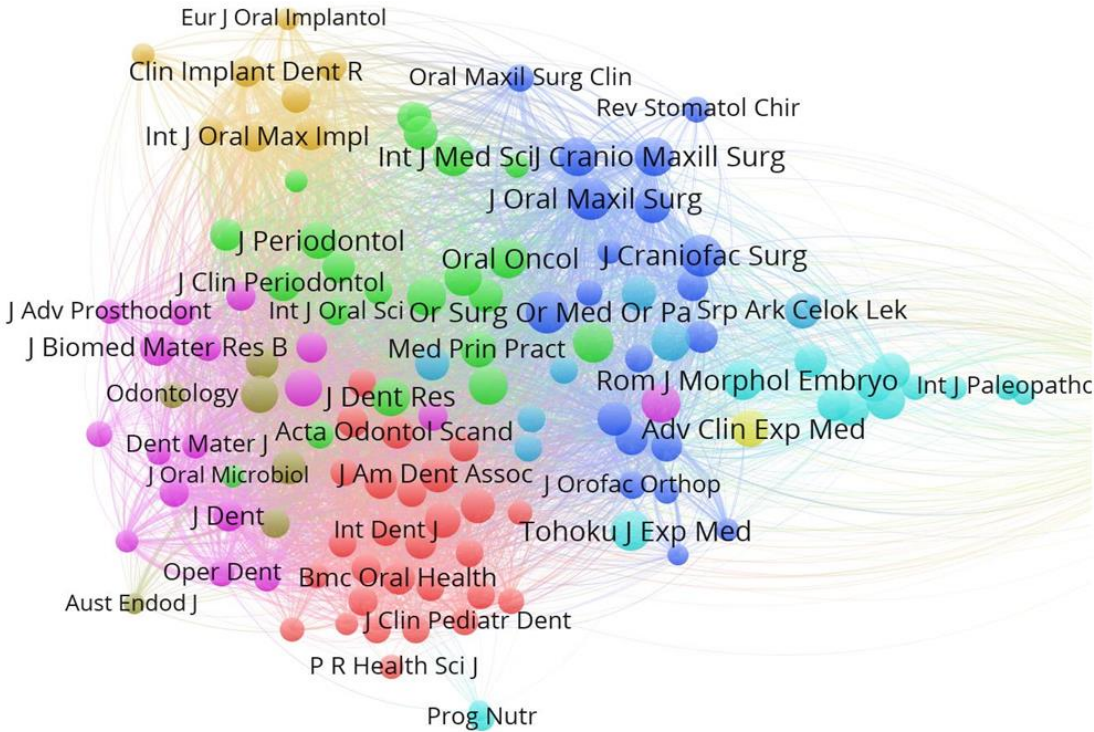


Case II Results – General overview

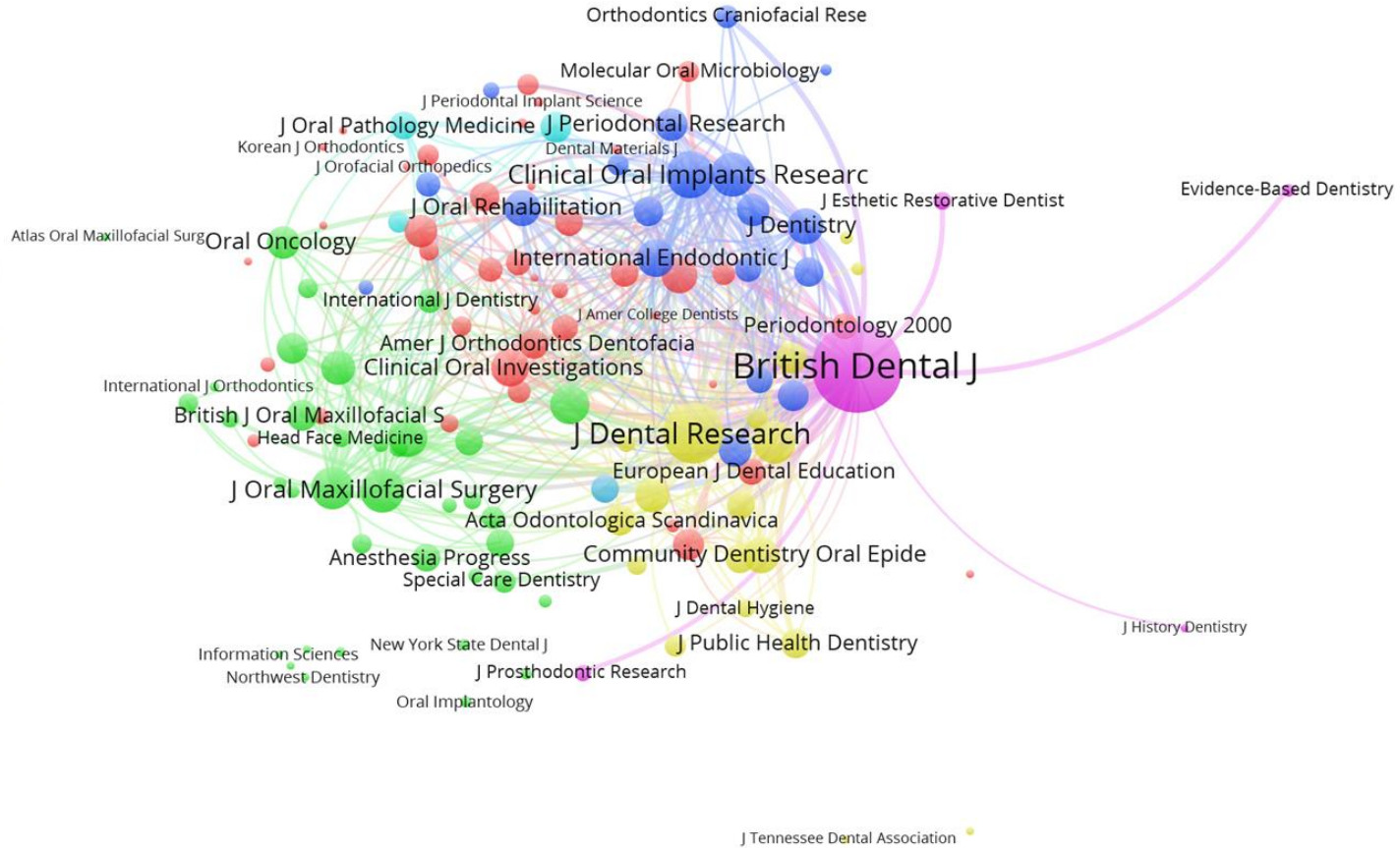
	Journal	Association	Publisher
# tweets	11825	561	85
% self-tweets	98.0%	84.8%	98.8%
# retweets	59	218	16
# impressions	9230	695	60
Attention rate	0,78	1,24	0,71

Case II Results - Networks

A) Co-citation network

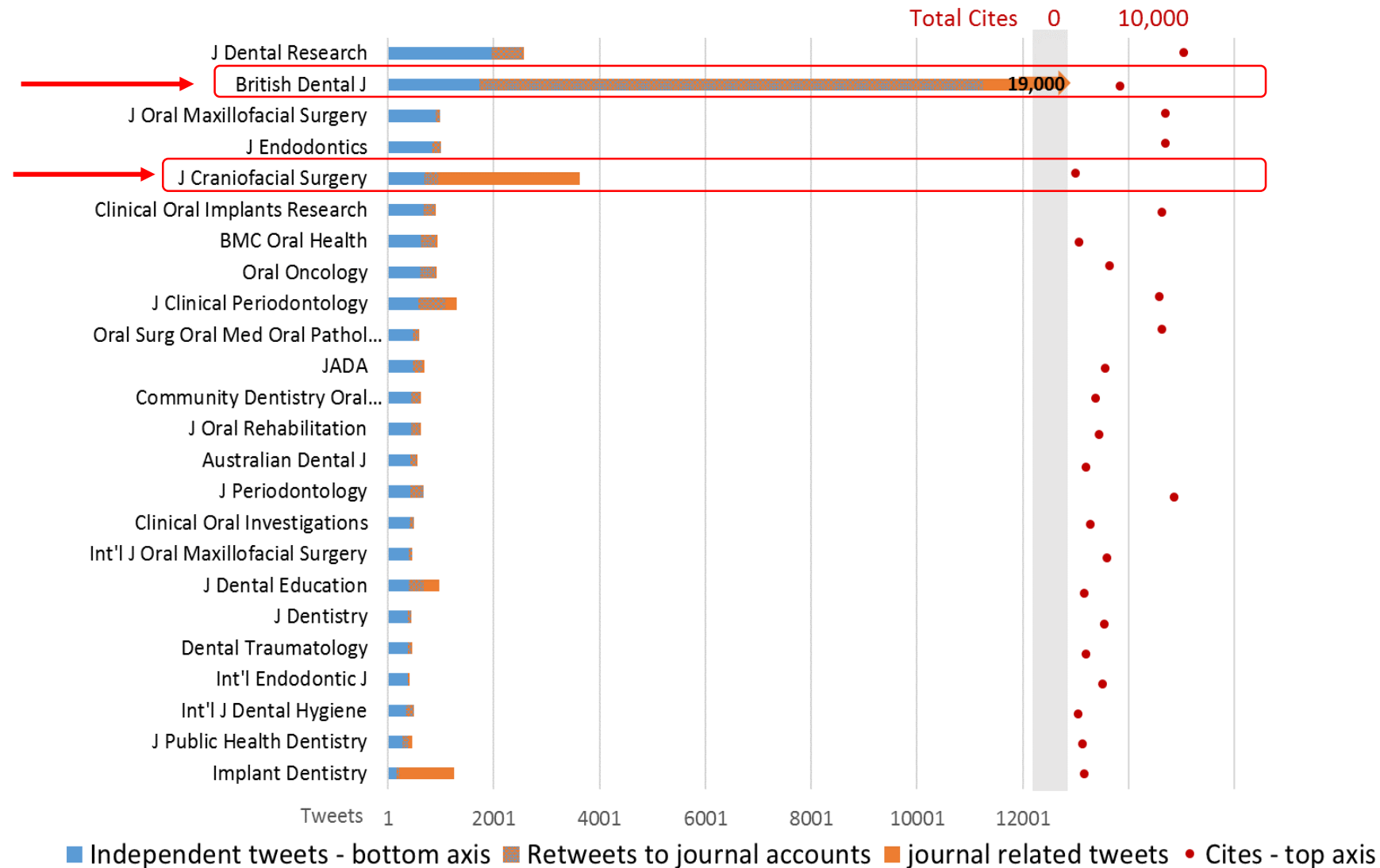


B) Overlay tweet network

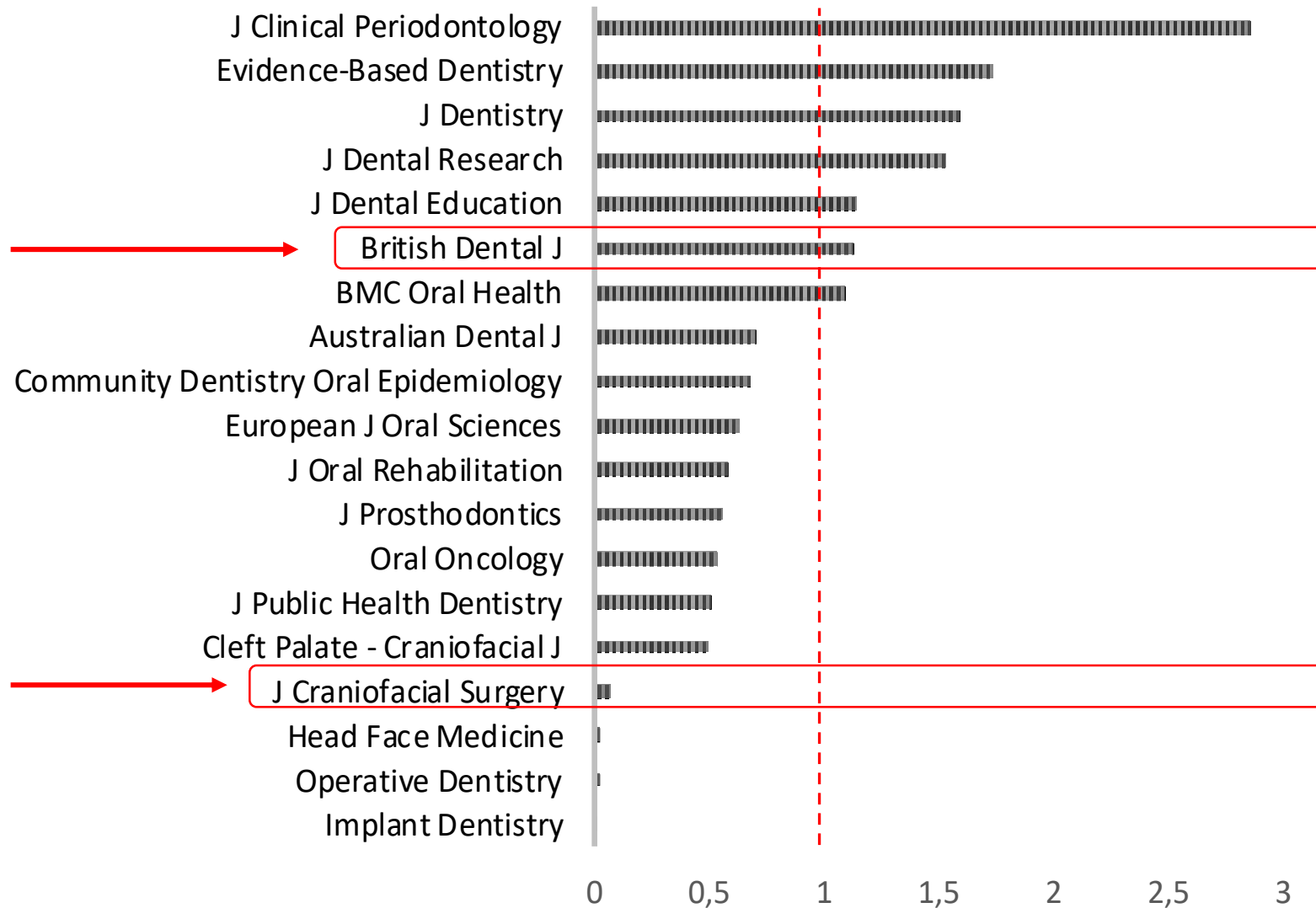


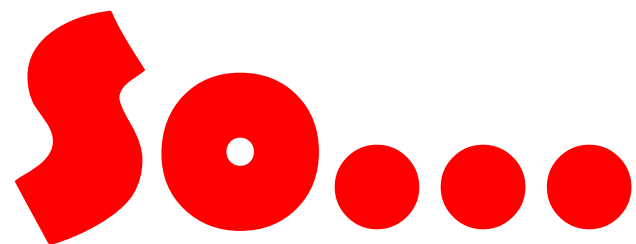
Leydesdorff et al., 2017

Case II Results – Citations vs. Tweets



Case II Results – Uptake rate





**Engagement, marketing or just
gibberish?**

Discussion Towards a better understanding of Twitter use in scholarly communication

- Twitter activity represent rich and valuable data **but** we are not capable to identify it
- The citation model does not work and should not be encouraged in altmetric studies **if** the purpose is research evaluation
- Attention, marketing and engagement are not the same, **although** they are related

Discussion Further research

1. Does tweet engagement affects dissemination?
2. Do journals follow a selection strategy of what is tweeted?
3. Are these strategies successful? Do they affect readership?

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THANK YOU!

**@nrobinsongarcia, @RodrigoCostas1, @vulnerablepops, J. Melkers
and D. Hicks**